

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): HARADA et al.	Atty. Dkt.: 02-010-DIV
Serial No.: UNKNOWN	Group Art Unit:
Filed: Concurrently herewith	Examiner:
Title: DIRECT CURRENT MOTOR USING MAGNETS WITH EXTENSIONS	

Assistant Commissioner for Patents
Washington, D.C. 20231

Date: November 29, 2001

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to the initial examination of the above-referenced application, please enter the following amendments and consider the appended remarks.

IN THE SPECIFICATION

Please replace the paragraph beginning on page 1, line 4 with the following:

The present application is a division of Application Serial No. 09/536,401, filed on March 28, 2000, entitled DIRECT CURRENT MOTOR USING MAGNETS WITH EXTENSIONS and is related to and incorporates herein by reference Japanese Patent Applications No. 11-142042 filed on May 21, 1999, No. 11-203769 filed on July 16, 1999 and No. 11-270566 filed on September 24, 1999.

Please replace the paragraph beginning on page 1, line 23 with the following:

The commutator 24 has a plurality of segments 24a on which the brushes 25 slide, so that the direct current flows from the brushes 25 to the coils 27 through the segments 24a of a commutator 24. Thus, the armature 23 rotates in the clockwise direction (arrow X) in the figures, as the direction of current flowing in the coils 27 is reversed.

Please replace the paragraph beginning on page 2, line 15 with the following:

Figs. 14A to 14C correspond to Figs. 13A to 13C. When the armature 23 rotates as shown in the order of Figs. 13A, 13B and 13C, the direction of current I in the coil is reversed. The direction of the magnetic field in the core 26 wound with the core coil 27 is reversed. The rotating force is generated to rotate the armature 23 by the electromagnetic force of the coils 27 and the magnetic force of the magnets 21 and 22.

IN THE CLAIMS

Please cancel claims 1 – 20 without prejudice.

Please add the following new claims:

21. (Amended) A direct current motor comprising:

an armature having a core and coils wound on the core;

magnets arranged to face each other through the armature;

a commutator operatively connected to the coils; and

a brush disposed in sliding contact with the commutator for shorting each coil during a commutation period to reverse a direction of current in the coil,

wherein each magnet has a main part and an extension at an end of the main part to generate in the coil an induction voltage that counteracts a reactance voltage,

wherein the main part and the extension have a similar uniform thickness;

wherein a magnetization in the extension part at an end side in a rotation direction of the armature is stronger than that at a boundary part between the main part and the extension, and

wherein a magnetic dipole orientation in the main part is directed to a rotation axis of the armature, and magnetic dipole orientation in the end side of the extension is directed to a radially outer side from the rotation axis of the armature.

22. (New) The direct current motor of claim 21, wherein each magnets have thinned ends at both terminal ends.

23. (New) The direct current motor of claim 21, wherein the magnet has a visible member thereon at a location other than a planar surface, which is attached to a housing.

24. (New) The direct current motor of claim 23, wherein the visible member is provided at a position deviated from a center of the magnet in a circumferential direction.

25. (New) The direct current motor of claim 24, wherein the visible member is provided within a range of the main part.

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26. (New) The direct current motor of claim 24, wherein the visible member is provided at one terminal end of the magnet.

27. (New) The direct current motor of claim 24, wherein the visible member is a recess.

28. (New) The direct current motor of claim 24, wherein the visible member is a colored marking.

REMARKS

Examination of the present divisional application based on the above newly added claims is respectfully requested.

In the present preliminary amendment the specification has been amended to cross reference the related applications and to eliminate grammatical errors. Claims 1 – 20 have been canceled without prejudice and new claims 21 – 28 have been added. New claims 21 – 28 are directed to, for example, the fifth through eighth embodiments of the present invention shown in FIGS. 9 - 12.

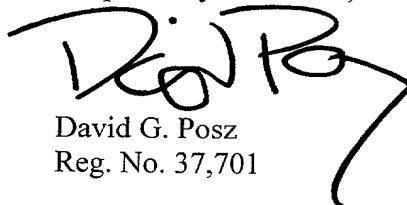
Support for independent claim 21 can be found, for example, on page 16, lines 8 – 18. Support for claim 22 can be found, for example, on page 16, lines 20 – 23. Support for claims 23 - 28 can be found, for example, on page 17, lines 5 – 22.

In view of the above amendments and remarks, the present application is believed to be in condition for allowance. A prompt notice to that effect is respectfully requested.

Although no additional fees are believed to be due, permission is hereby given to charge any unforeseen fees to deposit account 50-1147.

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Respectfully submitted,


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MARKED-UP VERSION OF AMENDED SPECIFICATION AND CLAIMS

IN THE SPECIFICATION

Please replace the paragraph beginning on page 1, line 4 with the following:

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The paragraph beginning on page 2, line 15 has been amended as follows:

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Figs. 14A to 14C [corresponds] correspond to Figs. 13A to 13C. When the armature 23 rotates as shown in the order of Figs. 13A, 13B and 13C, the direction of current I in the [soil] coil is reversed. The direction of the magnetic field in the core 26 wound with the core coil 27 is reversed. The rotating force is generated to rotate the armature 23 by the electromagnetic force of the coils 27 and the magnetic force of the magnets 21 and 22.